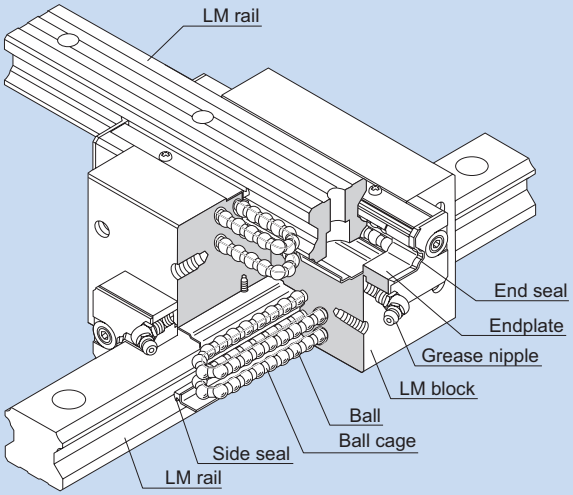
SCR

Caged Ball LM Guide
Cross LM Guide Model SCR



* For the ball cage, see A-130.

Structure and Features

Balls roll in four rows of raceways precision-ground on an LM rail and an LM block, and ball cages and endplates incorporated in the LM block allow the balls to circulate.
This model is an integral type of Caged Ball LM Guide that squares an internal structure similar to model SHS, which has a proven track record and is highly reliable, with another and uses two LM rails in combination. Since an orthogonal LM system can be achieved with model SCR alone, a conventionally required saddle is no longer necessary, the structure for X-Y motion can be simplified and the whole system can be downsized.

[4-way Equal Load]
Each row of balls is placed at a contact angle of 45° so that the rated loads applied to the LM block are uniform in the four directions (radial, reverse radial and lateral directions), enabling the LM Guide to be used in all orientations and in extensive applications.

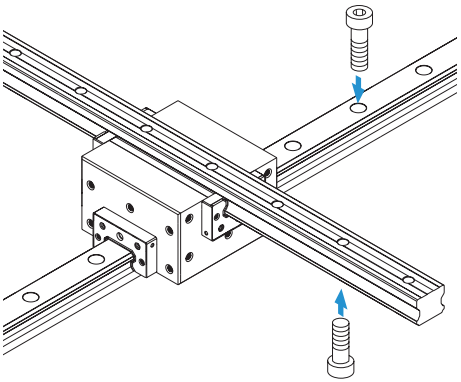
[High Rigidity]
Since balls are arranged in four rows in a well-balanced manner, this model is stiff against a moment, and smooth straight motion is ensured even a preload is applied to increase the rigidity.
Since the rigidity of the LM block is higher than that of a combination of two LM blocks of the conventional type secured together back-to-back with bolts, this model is optimal for building an X-Y table that requires a high rigidity.

[Compact]
This model is an integral type of Caged Ball LM Guide that squares an internal structure similar to model SHS, which has a proven track record and is highly reliable, with another and uses two LM rails in combination. Since an orthogonal LM Guide can be achieved with model SCR alone, a conventionally required saddle is no longer necessary, the structure for X-Y motion can be simplified and the whole system can be downsized.

Model SCR

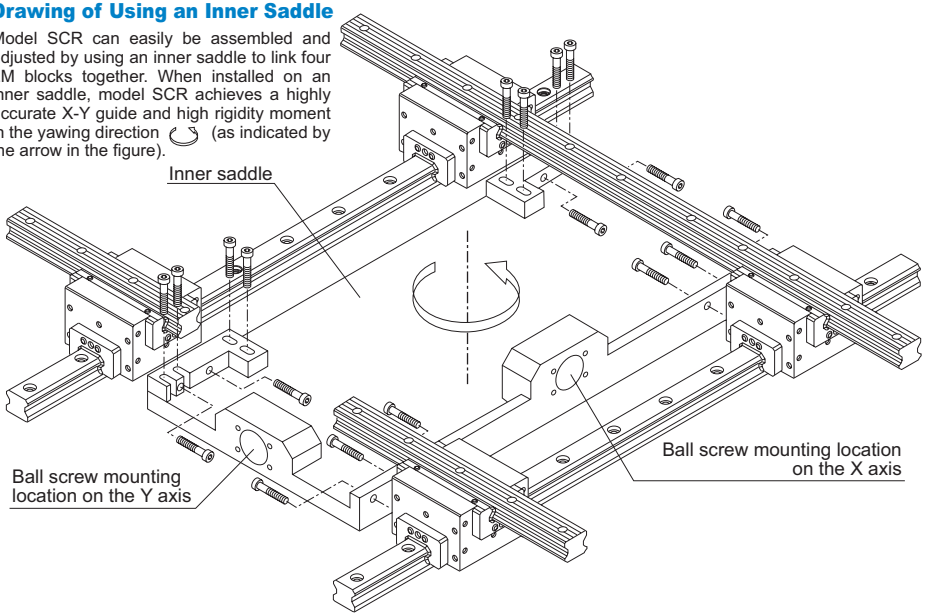
Specification Table⇒B-56

This model is a standard type.



Drawing of Using an Inner Saddle

Model SCR can easily be assembled and adjusted by using an inner saddle to link four LM blocks together. When installed on an inner saddle, model SCR achieves a highly accurate X-Y guide and high rigidity moment in the yawing direction (as indicated by the arrow in the figure).



Rated Loads in All Directions

Model SCR is capable of receiving loads in four directions: radial, reverse radial and lateral directions.
The basic load ratings are defined with a LM rail and a LM block, and uniform in the four directions (radial, reverse radial and lateral directions). Their actual values are provided in the specification table for SCR.

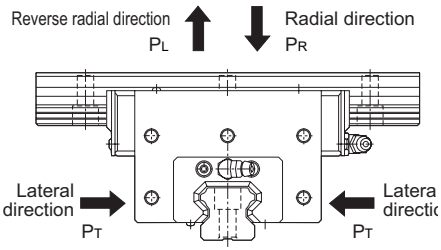


Fig.1

Equivalent Load

When the LM block of model SCR receives loads in all directions simultaneously, the equivalent load is obtained from the equation below.

$$P_E = P_R\ (P_L) + P_T$$

P_E : Equivalent load (N)
: Radial direction
: Reverse radial direction
: Lateral direction
P_R : Radial load (N)
P_L : Reverse radial load (N)
P_T : Lateral load (N)

Service Life

For details,see A-100.

Radial Clearance Standard

For details,see A-113.

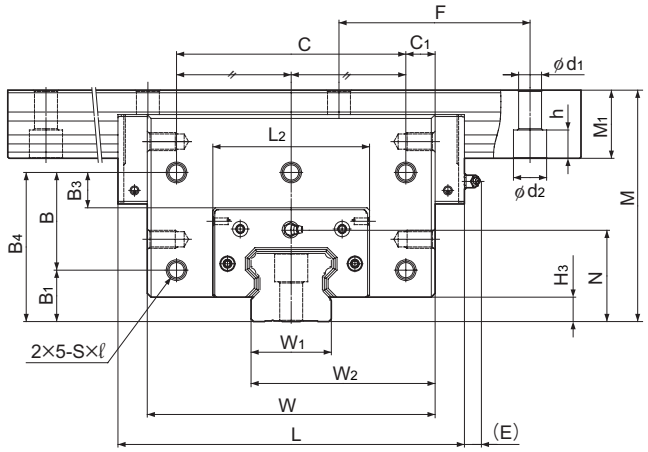
Accuracy Standards

For details,see A-122.

Shoulder Height of the Mounting Base and the Corner Radius

For details,see A-327.

Model SCR



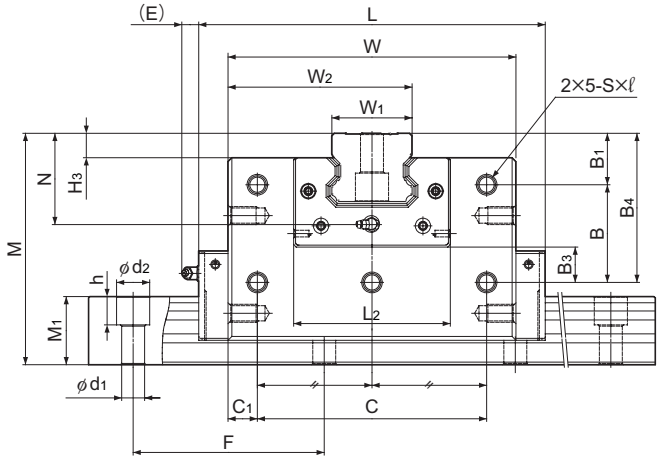
Model No.	Outer dimensions			LM block dimensions										
	Height	Width	Length											
	M	W	L	B_1	B_3	B_4	B	C	C_1	S×ℓ	L_2	H_3	N	E
SCR 15S	47	48	64.4	—	11.3	34.8	—	20	14	M4×6	33.4	3	18.5	5.5
SCR 20S	57	59	79	—	13	42.5	—	30	14.5	M5×8	43	4.6	23.5	12
SCR 20	57	78	98	13	7.5	37	24	56	11	M5×8	43	4.6	23.5	12
SCR 25	70	88	109	18	9	44	26	64	12	M6×10	47.4	5.8	28.5	12
SCR 30	82	105	131	21	12	53	32	76	14.5	M6×10	58	7	34	12
SCR 35	95	123	152	24	14	61	37	90	16.5	M8×14	68	7.5	40	12
SCR 45	118	140	174	30	16.5	75	45	110	15	M10×15	84.6	8.9	49.5	16
SCR 65	180	226	272	40	27.5	116	76	180	23	M14×22	123	19	71	16

Model number coding

4 SCR25 QZ KKHH C0 +1200/1000L P

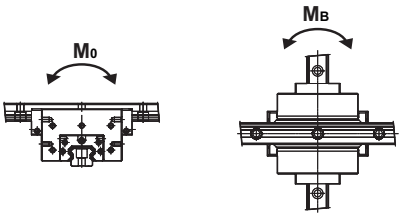
- 4: Total No. of LM blocks
- SCR25: Model number
- QZ: With QZ Lubricator
- KKHH: Contamination protection accessory symbol (*1)
- C0: Radial clearance symbol (*2) Normal (No symbol)/Light preload (C1) Medium preload (C0)
- +1200/1000L: LM rail length on the X axis (in mm) / LM rail length on the Y axis (in mm)
- P: Accuracy symbol (*3) Precision grade (P) Super precision grade (SP) Ultra precision grade (UP)

(*1) See contamination protection accessory on A-368. (*2) See A-113. (*3) See A-122.



Unit: mm

	Grease nipple	LM rail dimensions: Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	Mounting hole $d_1 \times d_2 \times h$	Basic load rating: C kN	C_0 kN	Static permissible moment: M_O kN-m	M_B kN-m	Mass: LM block kg	LM rail kg/m
	PB-1021B	15	31.5	13	60	4.5×7.5×5.3	14.2	24.2	0.16	0.296	0.54	1.3
	B-M6F	20	39.5	16.5	60	6×9.5×8.5	22.3	38.4	0.361	0.334	0.88	2.3
	B-M6F	20	49	16.5	60	6×9.5×8.5	28.1	50.3	0.473	0.568	1.7	2.3
	B-M6F	23	55.5	20	60	7×11×9	36.8	64.7	0.696	0.85	3.4	3.2
	B-M6F	28	66.5	23	80	9×14×12	54.2	88.8	1.15	1.36	4.6	4.5
	B-M6F	34	78.5	26	80	9×14×12	72.9	127	2.01	2.34	6.8	6.2
	B-PT1/8	45	92.5	32	105	14×20×17	100	166	3.53	3.46	10.8	10.4
	B-PT1/8	63	144.5	53	150	18×26×22	253	408	11.9	13.3	44.5	23.7



Description of Each Option ⇒A-351 Dimensions⇒B-223

Standard Length and Maximum Length of the LM Rail

Table1 shows the standard lengths and the maximum lengths of model SCR variations. If the maximum length of the desired LM rail exceeds them, jointed rails will be used. Contact THK for details.
For the G dimension when a special length is required, we recommend selecting the corresponding G value from the table.
The longer the G dimension is, the less stable the G area may become after installation, thus causing an adverse impact to accuracy.

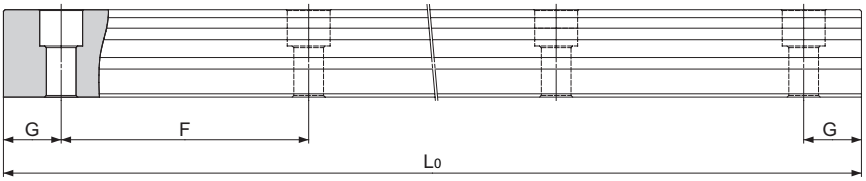


Table1 Standard Length and Maximum Length of the LM Rail for Model SCR

Unit: mm

Model No.	SCR 15	SCR 20	SCR 25	SCR 30	SCR 35	SCR 45	SCR 65
LM rail standard length (L_0)	160 220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1360 1480 1600	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1360 1480 1600 1720 1840 1960 2080 2200	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1300 1360 1420 1480 1540 1600 1720 1840 1960 2080 2200 2320 2440	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1560 1640 1720 1800 1880 1960 2040 2200 2360 2520 2680 2840 3000	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1560 1640 1720 1800 1880 1960 2040 2200 2360 2520 2680 2840 3000	570 675 780 885 990 1095 1200 1305 1410 1515 1620 1725 1830 1935 2040 2145 2250 2355 2460 2565 2670 2775 2880 2985 3090	1270 1570 2020 2620
Standard pitch F	60	60	60	80	80	105	150
G	20	20	20	20	20	22.5	35
Max length	2500	3000	3000	3000	3000	3090	3000

Tapped-hole LM Rail Type of Model SCR

The model SCR variations include a type with its LM rail bottom tapped. With the X-axis LM rail having tapped holes, this model can be secured with bolts from the top.

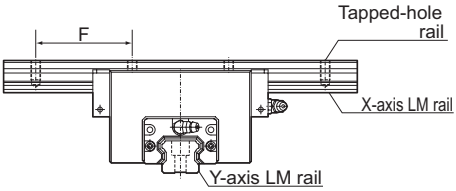


Table2 Dimensions of the LM Rail Tap

Unit: mm

Model No.	Tap diamete	Tap depth
15	M5	8
20	M6	10
25	M6	12
30	M8	15
35	M8	17
45	M12	20
65	M20	30

Model number coding

4 SCR35 KKHH C0 +1000L P K/1000L P

Symbol for tapped-hole LM rail type